

What is claimed is as follows:

1. A stent delivery system comprising:
a catheter comprising an expandable distal portion, having an outer diameter,
5 constructed and arranged for expanding the outer diameter of said expandable distal
portion from a contracted state to an expanded state;
a stent positioned around said distal portion of said catheter, said stent having a
contracted condition and being expandable to an expanded condition, the stent being
sized in said contracted condition to surround said expandable distal portion in its
10 contracted state, said stent having a first end and a second end, wherein at least a portion
of the stent may be positioned over a portion of said expandable portion of said catheter;
and
a first sleeve in the region of said distal portion of said catheter positioned
around said catheter, the first sleeve having a first end attached to said catheter and a
15 second end, said second end of the first sleeve abutting the first end of the stent.
112 2. The stent delivery system of claim 1, wherein the stent is
expanded by expansion of ¹¹⁴(said balloon) and the stent is mounted on the balloon.
3. The stent delivery system of claim 1, further comprising a second
sleeve in the region of said distal portion of said catheter positioned around said
20 catheter, the second sleeve having a first end attached to said catheter and a second end,
said second end of the first sleeve abutting the second end of the stent.
4. The stent delivery system of claim 1, wherein the second end of
the first sleeve has a thickness and the first end of the stent has a thickness similar to
that of the second end of the first sleeve, such that profile transition from the second end
25 of the first sleeve and the first end of the stent is relatively smooth.
5. The stent delivery system of claim 3, wherein the second end of
the first sleeve has a thickness and the first end of the stent has a thickness similar to
that of the second end of the first sleeve, such that profile transition from the second end
of the first sleeve and the first end of the stent is relatively smooth.
30 6. The stent delivery system of claim 1, said first sleeve being
formed in the shape of a thin-walled tube.

- 113 7. The stent delivery system of claim 1, further comprising an outer

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8. The stent delivery system of claim 3, said sleeves being formed from polyurethane.

9. The stent delivery system of claim 3, said sleeves being formed from any elastomer able to be expanded with a balloon angioplasty catheter, and
5 formable into a thin-walled tube.

10. The stent delivery system of claim 1, wherein the second end of the first sleeve has an annular region of increased thickness.

11. The stent delivery system of claim 3, wherein the second ends of the sleeves have an annular region of increased thickness.

10 12. The stent delivery system of claim 10, wherein the annular region of increase thickness is in the form of a bulbous bulge.

13. The stent delivery system of claim 11, wherein the annular regions of increase thickness are in the form of a bulbous bulge.

14. The stent delivery system of claim 1, said first sleeve being
15 formed in the shape of a coil, such that the second end of the first sleeve is urged against the first end of the stent.

15. The stent delivery system of claim 3, said sleeves being formed in the shape of a coil, such that the second ends of the sleeves are urged against the ends of the stent.

20 16. The stent delivery system of claim 1, said second end of said first sleeve having greater thickness relative to the first end of the first sleeve.

17. The stent delivery system of claim 3, said second ends of said sleeves having greater thickness relative to the first ends of the sleeves.

18. The stent delivery system of claim 1, wherein the second end of
25 the first sleeve does not overlap the first end of the stent.

19. The stent delivery system of claim 3, wherein the second ends of the sleeves do not overlap the ends of the stent.

20. The stent delivery system of claim 3, wherein the second ends of the sleeves are urged against the ends of the stent, whereby when said expandable distal
30 portion is expanded from said contracted state to said expanded state said stent is expanded, the center portion of the stent being expanded first while the expansion of the ends of the stent are delayed until the release force between the second ends of the

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sleeves and the ends of the stent are overcome by the expansion of the expandable distal portion, thereby providing an overall uniform expansion of the stent.

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